

A technique for interchanging wavelengths in a multi-wavelength system having W wavelength channels is disclosed. In one embodiment, the technique is realized by selectively directing a pair of adjacent frequency channels corresponding to a respective pair of adjacent wavelength channels based upon a routing algorithm. The frequencies of the selectively directed pair of adjacent frequency channels are then interchanged. The interchanged frequencies of the selectively directed pair of adjacent frequency channels are then selectively shifted based upon a binary representation of each interchanged frequency.